



PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : James W. Baumgartner et al.
Serial No. : 09/090,867
Filed : June 4, 1998
For : TESTIS-SPECIFIC RECEPTOR

Examiner : Lazar-Wesley, E.

Art Unit : 1646

Docket No.: 95-33D1

Date : July 21, 1999

Assistant Commissioner for Patents
Washington, D.C. 20231

Declaration Under 37 C.F.R. § 1.131

Sir:

We, James W. Baumgartner, Theresa M. Farrah, Donald C. Foster, Frank J. Grant, and Patrick J. O'Hara, do hereby declare as follows:

1. We are the inventors of the above-identified patent application.

2. All of the work described herein was performed in the United States of America by us or under our direction.

3. We have reviewed laboratory notes and other records, including the exhibits submitted herewith, and have determined that the invention recited in claims 1-32 of the above-identified patent application was reduced to practice before March 1, 1996 or was conceived before March 1, 1996 and was subsequently constructively reduced to practice with the filing of the patent application on March 13, 1996.

4. Attached hereto as Exhibit 1 is a copy of a computer printout of the DNA and deduced amino acid sequence of a clone designated "zcytor2." This printout is dated

prior to March 1, 1996. The sequences shown in Exhibit 1 correspond to those disclosed in the patent application in SEQ ID NO:1 and SEQ ID NO:2.

5. Attached hereto as Exhibit 2 is a copy of a portion of a memo written by one of us (Frank J. Grant) before March 1, 1996, which describes particular goals for the WSXWS receptor project, which project included the zcytor2 receptor. As stated in the memo, these goals included preparation of soluble forms (i.e., extracellular ligand-binding domains) of receptors. The memo also describes our intent to clone and express full-length, receptor-encoding cDNAs.

6. Attached hereto as Exhibit 3 is a copy of a page from the notebook of Cameron Brandt, a research associate working under our direction. This page, written before March 1, 1996, describes a plan to prepare polypeptide fusions comprising a soluble receptor and an immunoglobulin Fc polypeptide.

7. Attached hereto as Exhibit 4 is a copy of a slide prepared by one of us (Donald C. Foster) for an in-house seminar on the WSXWS receptor project. This slide was prepared before March 1, 1996. This slide illustrates a plan to express new receptor-encoding DNAs in cultured cells, whereby the cells would produce the encoded receptor.

8. On the basis of these Exhibits we conclude that the invention recited in claims 1-32 of the patent application was reduced to practice before March 1, 1996 or was conceived before March 1, 1996 and was subsequently constructively reduced to practice with the filing of the patent application on March 13, 1996.

We further declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that the making of willfully false statements and the like is punishable by fine or imprisonment, or both, under

Section 1001 of Title 18 of the United States Code, and may jeopardize the validity of any patent issuing from this patent application.

James W. Baumgartner

Date

Theresa M. Farrah
Theresa M. Farrah

19 August 1999
Date

Donald C. Foster

Date

Frank J. Grant

Date

Patrick J. O'Hara

Date

HZCYTOR02.SEQ -

Sequence of pcr products generated with 9800-9802,
nested pcr product 9941-AP2 (9801-AP1)
nested pcr product 9937-AP2 (9803-AP1)

Enzyme	Recognition	Cut Site
AgeI	(A [^] CCGGT)	Def: 1124
BamHI	(G [^] GATCC)	Def: 172
DraI	(TTT [^] AAA)	Def: 36
EcoRI	(G [^] AATTC)	Def: 450
EcoRV	(GAT [^] ATC)	Def: 438
HpaI	(GTT [^] AAC)	Def: 145
MscI	(TGG [^] CCA)	Def: 1244
MunI	(C [^] AATTG)	Def: 493
NcoI	(C [^] CATGG)	Def: 377
NsiI	(ATGCA [^] T)	Def: 592
Ppu10I	(A [^] TGCAT)	Def: 588
SmaI	(CCC [^] GGG)	Def: 11
SspI	(AAT [^] ATT)	Def: 503 988 1107
XmaI	(C [^] CCGGG)	Def: 9

HZCYTOR02.SEQ Linear LENGTH = 1289

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      XmaI      SmaI      DraI
      |        |        |
1  CCCCCCGCCGGGAGAGAGGCAATATCAAGGTTTTAAATCTCGGAGAAATGGCTTTGCTTGGCT 69
   GGGGGCGGGCCCTCTCTCGTTATAGTTCAAAATTTAGAGCCTCTTTACGAAAGCAAACGAACCGA
                                   M A F V C L A
      11          36
      9

70 ATCGGATGCTTATATACCTTTCTGATAAGCACAAACATTTGGCTGTACTTCATCTTCAGACACCGAGATA 138
   TAGCCTACGAATATATGGAAGACTATTCTGTTGTGTAACCGACATGAAGTAGAAGTCTGTGGCTCTAT
   I G C L Y T F L I S T T F G C T S S S D T E I

      HpaI      BamHI
      |        |
139 AAAGTTAACCTCCTCAGGATTTTGAGATAGTGGATCCCGGATACTTAGGTTATCTCTATTTGCAATGG 207
    TTTCATTTGGGAGGAGTCTTAAACTCTATCACCTAGGGCCTATGAATCCAATAGAGATAAACGTTACC
    K V N P P Q D F E I V D P G Y L G Y L Y L Q W
      145          172

208 CAACCCCACTGTCTCTGGATCATTTTTAAGGAATGCACAGTGGAAATATGAACTAAAATACCGAAACATT 276
    GTTGGGGGTGACAGAGACCTAGTAAATTCCTTACGTGTACCTTATCTTGAATTTATGGCTTTGTAA
    Q P P L S L D H F K E C T V E Y E L K Y R N I

277 GGTAGTGAACATGGAAGACCATCATTACTAAGAATCTACATTACAAAGATGGGTTTGATCTTAACAAG 345
    CCATCATTGTACCTTCTGGTAGTAATGATTCTTAGATGAATGTTTACCCAAACTAGAATTGTTTC
    G S E T W K T I I T K N L H Y K D G F D L N K

      NcoI
      |
346 GGCATTGAAGCGAAGATACACACGCTTTTACCATGGCAATGCACAAATGGATCAGAAGTTCAAAGTTCC 414
    CCGTAACTTCGCTTCTATGTGTGCGAAAATGGTACCGTTACGTGTTTACCTAGTCTTCAAGTTTCAAGG
    G I E A K I H T L L P W Q C T N G S E V Q S S
      377

      EcoRV      EcoRI
      |        |
415 TGGGCAGAACTACTTATTGGATATCACCACAAGGAATTCAGAACTAAAGTTCAGGATATGGATTGC 483
    ACCCGTCTTTGATGAATAACCTATAGTGGTGTTCCTTAAGGTCTTTGATTTCAGTCCTATACCTAAGC
    W A E T T Y W I S P Q G I P E T K V Q D M D C
      438          450

      MunI      SspI
      |        |
484 GTATATTACAATTGGCAATATTTACTCTGTTCTTGAAACCTGGCATAGGTGTACTTCTTGATACCAAT 552
    CATATAATGTTAAACGTTATAAATGAGACAAAGAACCTTTGGACCGTATCCACATGAAGAACTATGGTTA
    V Y Y N W Q Y L L C S W K P G I G V L L D T N
      493          503

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Ppu101
NsiI

553 TACAACTGTTTTACTGGTATGAGGGCTTGGATCATGCATTACAGTGTGTTGATTACATCAAGGCTGAT 621
ATGTTGAACAAATGACCATACTCCCGAACCTAGTACGTAATGTCACACAACATAATGTAGTCCGACTA
Y N L F Y W Y E G L D H A L Q C V D Y I K A D

592
588

622 GGACAAAATATAGGATGCAGATTTCCCTATTTGGAGGCATCAGACTATAAGATTTCTATATTTGTGTT 690
CCTGTTTTATATCCTACGTCTAAAGGGATAAACCTCCGTAGTCTGATATTTCTAAAGATATAAACACAA
G Q N I G C R F P Y L E A S D Y K D F Y I C V

691 AATGGATCATCAGAGAACAAGCCTATCAGATCCAGTTATTTCACTTTTCAGCTTCAAAATATAGTTAAA 759
TTACCTAGTAGTCTCTTGTTCGGATAGTCTAGGTCAATAAGTGAAAAGTCGAAGTTTATATCAATTT
N G S S E N K P I R S S Y F T F Q L Q N I V K

760 CCTTTGCCGCCAGTCTATCTTACTTTTACTCGGGAGAGTTTCATGTGAAATTAAGCTGAAATGGAGCATA 828
GGAAACCGCGGTGAGATAGAATGAAATGAGCCCTCTCAAGTACACTTTAATTCGACTTTACCTCGTAT
P L P P V Y L T F T R E S S C E I K L K W S I

829 CCTTTGGGACCTATTCAGCAAGGTGTTTTGATTATGAAATTGAGATCAGAGAAGATGATACTACCTTG 897
GGAAACCGCTGGATAAGGTGCCACAAACTAATACTTTAACTCTAGTCTCTTCTACTATGATGGAAC
P L G P I P A R C F D Y E I E I R E D D T T L

898 GTGACTGCTACAGTTGAAATGAAACATACACCTTGAAAACAACAAATGAAACCGACAATTATGCTTT 966
CACTGACGATGTCAACTTTTACTTTGTATGTGGAACTTTGTGTTTACTTTGGGCTGTTAATACGAAA
V T A T V E N E T Y T L K T T N E T R Q L C F

SspI

967 GTAGTAAGAAGCAAAGTGAATATTTATTGCTCAGATGACGGAATTTGGAGTGAGTGGAGTGATAAACAA 1035
CATCAATCTTCGTTTCACTTATAAATAACGAGTCTACTGCCTTAAACCTCACTCACCTCACTATTTGTT
V V R S K V N I Y C S D D G I W S E W S D K Q

988

1036 TGCTGGGAAGGTGAAGACCTATCGAAGAAAACCTTTGCTACGTTTCTGGCTACCATTTGGTTTCATCTTA 1104
ACGACCCTTCCACTTCTGGATAGCTTCTTTTGAACGATGCAAAGACCGATGGTAAACCAAAGTAGAAT
C W E G E D L S K K T L L R F W L P F G F I L

SspI

AgeI

1105 ATATTAGTTATATTTGTAACCGGTCTGCTTTTGCCTAAGCCAAACACCTACCCAAAAATGATTCCAGAA 1173
TATAATCAATATAACATTGGCCAGACGAAAACGCATTCGGTTTGTGGATGGGTTTTACTAAGGTCTT
I L V I F V T G L L L R K P N T Y P K M I P E

1107

1124

1174 TTTTCTGTGATACATGAAGACTTTCCATATCAAGAGACATGGTATTGACTCAACAGTTTCCAGTCATG 1242
AAAAAGACACTATGTACTTCTGAAAGGTATAGTTCTCTGTACCATAACTGAGTTGTCAAAGGTCAGTAC
F F C D T

MscI

1243 GCCAAATGTTCAATATGAGTCTCAATAAACTGAATTTTCTTGCGAA 1289
CGGTTTACAAGTTATACTCAGAGTTATTTGACTTAAAAAGAACGCTT

1244

DRAFT

DEPT.

Outline of things to consider for patent application of novel type I cytokine receptors

We have identified partial cDNA sequences for three new members of the type I cytokine receptor family. These receptors are characterized by a conserved cysteine pattern and an amino acid motif containing WSXWS. Members of this family include the receptors for TPO, EPO, Growth Hormone, Prolactin, IL-4, IL-7, IL-9, IL-2, IL-5, IL-3, GM-CSF, IL-6, CNTF, G-CSF and Leukemia inhibitory factor.

The main utility for these sequences would be to facilitate the cloning of the unknown ligands for the receptors. The receptors themselves (ie. soluble forms) might be potential therapeutics as well.

There are at least three ways the receptor sequence can be utilized to clone the ligands:

- a). Make receptor dependent cell lines (as was done in the [REDACTED] project) for use in an expression cloning project.
- b). Soluble forms of the receptor can be labeled and used as probes in an expression cloning system.
- c). The receptor could be attached to various columns or other supports and used to purify the ligand.

Patentable entities: (???????)

- a). The EST (expressed sequence tag) that allowed us to identify the partial sequence as novel member of the family. — *came from [REDACTED]*
- i). Allows us to clone the full length cDNA.
- b). The full length receptor encoding cDNA.
- c). Homologues of the cDNAs. It may be that murine versions of these receptors are necessary for ligand dependent cell line cloning.
- d). The ligands for the receptors.
- e). AIDS therapies. — *Discussed w/ Frank*

WHAT WE GOT:

a). [REDACTED]

i). [REDACTED]

ii). [REDACTED]

c). [REDACTED]

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5' :

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5

3':

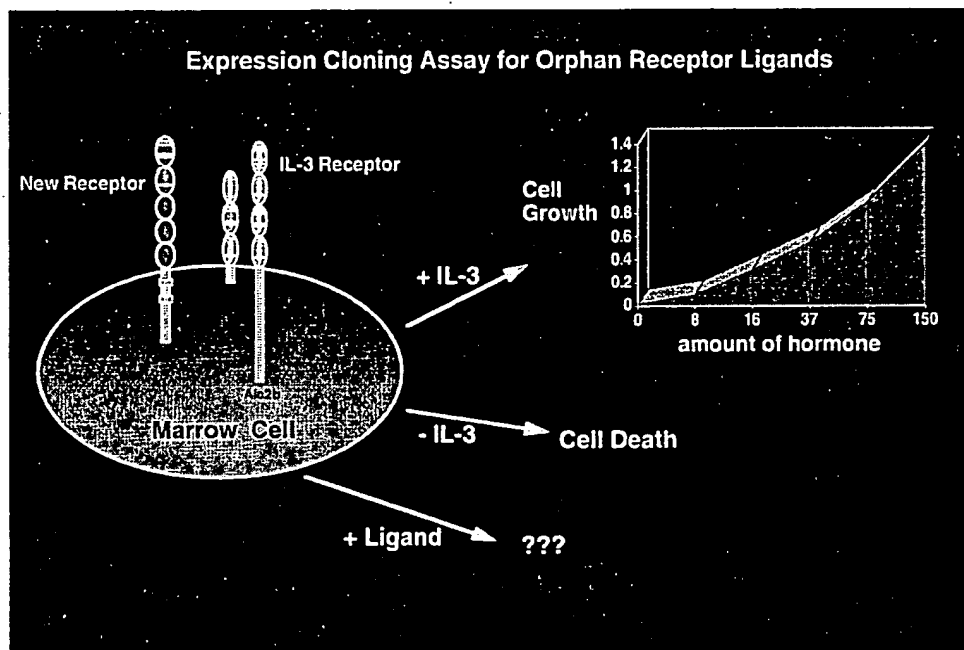


EXHIBIT 4